

NAME \_\_\_\_\_

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**Principles of Macroeconomics**

**Final Exam Answers**

You have a maximum of 150 minutes to complete this 200-point exam.

This is a closed-book, closed-notes exam. A 1-sided 8.5 x 11” notes sheet may be used. A calculator whose memory and programming are cleared may also be used

Calculations must be shown to receive any credit on questions that require calculations.

For questions that require explanations, your score depends entirely upon your explanation. Please demonstrate knowledge obtained in this class as precisely as possible.

Graphs must be fully labeled (each axis, point, and curve) to receive any credit.

**1. (60 points)** The United States has had persistently high trade deficits for many years. Answer (a)-(f) below in the context of an AD/AS/LRAS model (#5).

a) Name a change in United States government policy that will reduce the U.S. trade deficit for many years. Clearly explain why your policy change will reduce the trade deficit for a long time. Employ at least 1 equation in your explanation.

*A reduction in government purchases will reduce aggregate demand, reducing interest rates, depreciating the U.S. dollar, causing U.S. imports to fall and U.S. exports to rise. And since the trade deficit = imports – exports, a reduction in government purchases will reduce the U.S. trade deficit.*

b) Carefully and fully explain how your policy change may affect the value of the U.S. dollar relative to foreign currency—will the dollar *appreciate*, *depreciate*, or be *unaffected*?

*The policy reduces money demand since it causes prices to fall. A reduction in money demand causes interest rates to fall. Lower interest rates make the U.S. a less attractive place for foreigners to place their wealth, so they demand fewer U.S. dollars on foreign exchange markets. As a result, the dollar depreciates.*

c) Carefully and fully explain how your policy change will affect the amount of lending that foreigners do to the United States.

*The amount of lending that foreigners do is equal to the trade deficit. For example, a \$200 billion trade deficit means that foreigners are lending \$200 billion to the U.S. Since the U.S. trade deficit shrinks, the amount that foreigners lend to the U.S. also shrinks.*

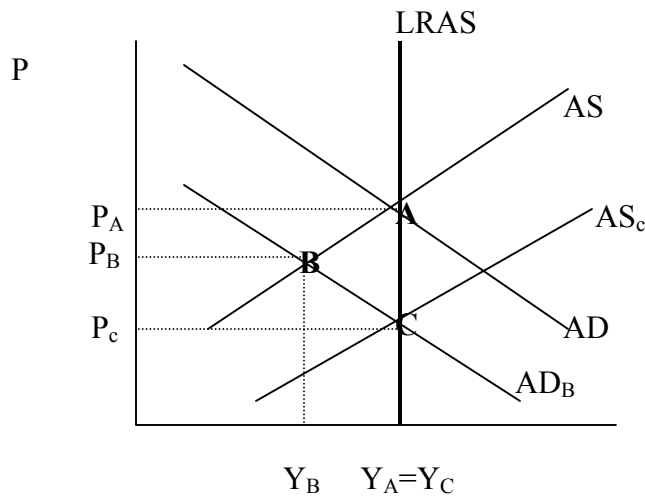
d) Clearly and fully explain how your policy change will affect the U.S. long run budget surplus. Employ at least 1 equation in your explanation.

*The budget surplus = tax and fee revenue – government spending. Since government spending is reduced, the budget surplus increases.*

e) Clearly and fully explain how your policy change will affect U.S. consumption in the *short run*. Employ at least 1 equation in your explanation.

*A reduction in government purchases results in reduced aggregate demand, and this causes national income to fall in the short run. This reduction in national income causes a fall in disposable personal income—income available for spending and saving by households. (In our models, disposable personal income = personal consumption expenditures + personal savings.) A reduction in disposable income causes a reduction in consumption.*

f) Use 1 or more graphs to illustrate the *short run and long run* effects of your policy change on the U.S. economy, assuming no government interference in the transition phase of the business cycle. (Fully label your graph(s); no numbers are required.)



**2. (40 points)** In a fake economy only 2 final goods are produced—cars and boats. In 1998 10 cars were produced, priced at \$100 each. In 1999 30 cars were produced at \$50 each. In 1998 30 boats were produced at \$20 each. In 1999 35 boats were produced at \$40 each. The base year in this economy is 1998.

Calculate:

$$1998 \text{ real GDP } \underline{1600} \underline{\hspace{2cm}} = 30 \times \$20 + 10 \times \$100$$

$$1999 \text{ real GDP } \underline{3700} \underline{\hspace{2cm}} = 35 \times \$20 + 30 \times \$100$$

$$1999 \text{ nominal GDP } \underline{2900} \underline{\hspace{2cm}} = 35 \times \$40 + 30 \times \$50$$

$$\text{Growth rate of total production, 1998-1999 } \underline{131.25\%} \underline{\hspace{2cm}} = (3700-1600)/1600$$

$$\text{Percentage change in the average price level, 1998-1999 } \underline{-21.622\%} \underline{\hspace{2cm}} = (78.378-100)/100$$

$$1998 \text{ gdp deflator} = 100$$

$$1999 \text{ gdp deflator} = (2900/3700) \times 100 = 78.378$$

**3. (10 points)** The President of the country of Xerk worries that future generations of Xerkians will not be much better off materially than the current generation of Xerkians. What policy can the President propose now that, if implemented, may help future generations of Xerkians? Will the present generation of Xerkians go along? Fully and clearly explain using information consistent with model #5.

*The President can act to increase gross private domestic investment (which adds to the nation's stock of physical capital over time). She can propose a tax hike or a reduction in government spending; either of these actions reduces long run interest rates, making it cheaper for firms to borrow, causing investment to go up in the long run. The present generation may not go along, since both of the President's proposals reduce the well-being of the present generation; a tax hike reduces consumption, and a reduction in government spending causes a reduction in the benefits that the present generation receives from government.*

**4. (10 points)** Next year the Fed may reduce the discount rate. Explain, in the context of the AD/AS model how this action will affect the U.S. budget surplus in the short run.

*A reduction in the discount rate causes a larger money supply which reduces interest rates in the short run. The reduction in interest rates causes higher short run aggregate demand, resulting in higher national income in the short run. Since the national income is the "tax base" that the federal government taxes, tax revenue will rise. And since the budget surplus = tax and fee revenue – government spending, the budget surplus will increase.*

**5. (10 points)** In a fake world there are only 2 countries—X and Y—and 2 goods—chips and soda. Country X is 10 times better at chip production than country Y. Country X is 20 times better at soda production than country Y.

**Can the two countries benefit from trade?** Clearly explain why or why not. (Explain the pattern of trade (exports and imports), if trade allows the countries to benefit.)

*Yes. Country X has the comparative advantage in soda production; it should export soda and import chips. Country Y has the comparative advantage in chip production; it should export chips and import soda. This pattern of international trade will allow citizens of both countries to consume more of each good (compared to a situation with no international trade).*

**6. (10 points)** Calculate GDP and national income using some of the data below.

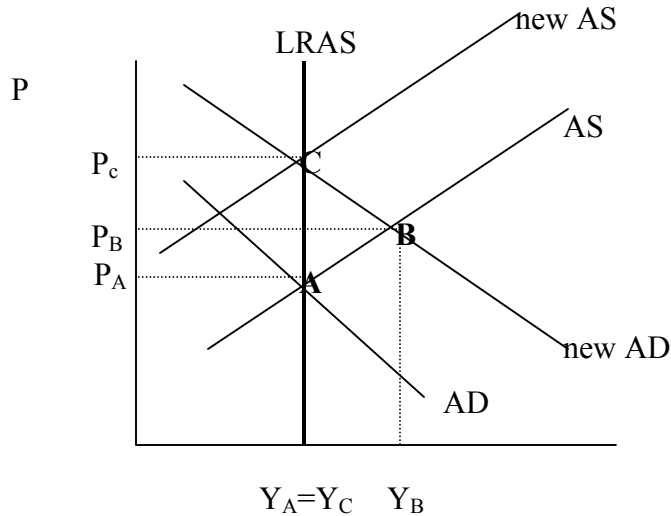
Net exports	-200
depreciation	100
disposable personal income	1500
government purchases	500
gross private domestic investment	400
(net) indirect business taxes	300
personal consumption expenditures	1400
transfer payments	30
net factor payments to rest of world	50

GDP 2100 = 1400 + 400 + 500 - 200

national income 1650 = 2100 - 100 - 300 - 50

**7. (60 points)** Next year, Congress and the President may permanently cut taxes and permanently increase government spending.

a) Use an AD/AS/LRAS model (#5) to graph the short run and long run effects of these actions, assuming that the government does NOT intervene in the transition phase of the business cycle.



Below, you will do forecasts using the AD/AS/LRAS model (#5), explaining whether each variable will be *higher*, *lower*, or *at the same level* relative to its value in the initial equilibrium (before the policy change)

b) Write your short run and long run forecasts for personal savings. Explain each forecast.

short run higher \_\_\_\_\_ long run higher \_\_\_\_\_

*Tax reductions cause both a short run and long run increase in disposable personal income—income available for spending and saving. Higher disposable personal income results in higher personal savings*

c) Write your short run and long run forecasts for the trade deficit. Explain each forecast.

short run higher \_\_\_\_\_ long run higher \_\_\_\_\_

*Tax reductions and increases in government spending cause higher interest rates in both the short run and the long run. These higher interest rates cause an appreciated U.S. dollar in both the short run and the long run. An appreciated dollar results in a larger trade deficit.*

d) Write your short run and long run forecasts for unemployment. Explain each forecast.

short run lower \_\_\_\_\_ long run at the same level \_\_\_\_\_

*Unemployment falls in the short run because the government policies cause GDP to rise in the short run. Unemployment is at its original level in the long run because the government policies cause GDP to return to its original level in the long run.*

e) Write your short run and long run forecasts for investment. Explain each forecast.

short run lower \_\_\_\_\_ long run lower \_\_\_\_\_

*The government policies cause interest rates to be higher in both the short run and the long run (due to higher money demand). Higher interest rates mean that it's more expensive to borrow, causing investment to be lower.*

f) Write your short run and long run forecasts for the budget surplus. Explain each forecast.

short run \_\_\_ smaller \_\_\_\_\_ long run \_\_\_ smaller \_\_\_\_\_

*The budget surplus = tax and fee revenue – government spending*

*The government policies tax and fee revenue to be lower and government spending to be higher, in both the short run and the long run. According to the above equation, this means that the budget surplus will be smaller in both the short run and the long run.*